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**“जानने का अधिकार, जीने का अधिकार”**

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

**“पुराने को छोड़ नये के तरफ”**

Jawaharlal Nehru

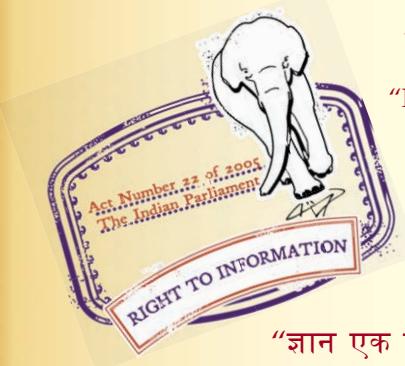
“Step Out From the Old to the New”

IS 8323 (1977): Palm Oil [FAD 13: Oils and Oilseeds]

**“ज्ञान से एक नये भारत का निर्माण”**

Satyanaaranay Gangaram Pitroda

Invent a New India Using Knowledge



**“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”**

Bhartṛhari—Nītiśatakam

“Knowledge is such a treasure which cannot be stolen”





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**IS : 8323 - 1977**  
**(Reaffirmed 1994)**

*Indian Standard*  
**SPECIFICATION FOR PALM OIL**

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Third Reprint JULY 1998

(Incorporating Amendment No. 1.)

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BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHAJUR SHAH ZAFAR MARG  
NEW DELHI 110002

\* Gr 2

*February 1977*

**AMENDMENT NO. 2 DECEMBER 1995**  
**TO**  
**IS 8323 : 1977 SPECIFICATION FOR PALM OIL**

( *Page 2, Foreword* ) — Add the following clause 0.7 after 0.6 and renumber the subsequent clause:

'0.7 A scheme for labelling environment friendly products to be known as ECO Mark has been introduced at the instance of the Ministry of Environment and Forests ( MEF ). The ECO Mark shall be administered by the Bureau of Indian Standards ( BIS ) under the BIS Act, 1986 as per the Resolution No. 71 dated 20 February 1991 as published in the Gazette of the Government of India vide GSR 85(E) dated 21 February 1991. For a product to be eligible for marking with the ECO Mark it shall also carry the Standard Mark of BIS for quality besides meeting additional optional environment friendly ( EF ) requirements. The EF requirements for palm oil are therefore being included through an amendment.

This amendment is based on the Gazette Notification No. 678 dated 30 August 1994 for Labelling Edible Oils, Tea and Coffee as environment friendly products, published by the Ministry of Environment and Forests.'

( *Page 3, clause 4.4* ) — Add the following clauses after 4.4:

**4.5 Optional Requirements for ECO Mark**

**4.5.1 General Requirements**

**4.5.1.1** The product shall conform to the requirements of quality prescribed under clauses 4.1 to 4.4.

**4.5.1.2** The manufacturers shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the norms laid down under the Water ( Prevention and Control of Pollution ) Act, 1974; Air ( Prevention and Control of Pollution ) Act, 1981; Water ( Prevention and Control of Pollution ) Cess Act, 1977 respectively, along with the authorization, if required under the Environment ( Protection ) Act, 1986, while applying for ECO Mark.

**4.5.2 Specific Requirements**

**4.5.2.1** The product shall not contain aflatoxin, more than 5 mg/kg, when tested by the method prescribed in Appendix A.

4.5.2.2 The pesticide residues, if any, shall not exceed the tolerance limits as prescribed in the *Prevention of Food Adulteration Act, 1954* and *Rules* made thereunder.

4.5.2.3 Only permitted antioxidants not exceeding the quantities specified against each as prescribed under the *Prevention of Food Adulteration Act, 1954* and *Rules* made thereunder, shall be used, if required.

4.5.2.4 The product shall not contain any of the toxic metals in excess of the quantities prescribed in Table 2.

TABLE 2 LIMITS FOR TOXIC METALS

SL NO.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO
i)	Lead, mg/kg, Max	5.0	15 of IS 1699 : 1995*
ii)	Arsenic, mg/kg, Max	0.5	do
iii)	Cadmium, mg/kg, Max	1.0	do
iv)	Mercury (total) mg/kg, Max	0.25	do

\*Methods of sampling and test for food colours ( second revision ).

( *Page 3, clause 5.1* ) — Add the following clause 5.1.1 after 5.1:

5.1.1 For ECO Mark the product shall be packed in such packages which are made from recyclable ( that is which can be re-processed to manufacture any useful product ) or biodegradable materials.'

( *Page 5, clause 6.2* ) — Add the following clause 6.3 after 6.2:

"6.3 For ECO Mark the containers shall be marked with the following information:

- a) List of identified critical ingredients in descending order of quantity, percent by mass, which shall include 'made from palm oil';
- b) The brief criteria for which the product has been labelled for ECO Mark; and
- c) Shelf life of the product."

(Page 5, clause 8.2) — Add the following Appendix after 8.2:

**'APPENDIX A  
(Clause 4.5.2.1)**

**DETERMINATION OF AFLATOXIN**

**A-1 REAGENTS**

**A-1.1 Acetone, 70 Percent** — 700 ml acetone in 300 ml distilled water.

**A-1.2 Acetone, 20 Percent** — 200 ml acetone in 800 ml distilled water.

**A-1.3 Lead Acetate, 20 Percent** — 200 g neutral acetate in distilled water and 3 ml glacial acetic acid, diluted to one litre.

**A-2 PROCEDURE**

**A-2.1** Dissolve 30 g sample in 100 ml hexane.

**A-2.2** Extract with 3 × 50 ml 70 percent acetone.

**A-2.3** To the extract add 60 ml distilled water and 20 ml lead acetate.

**A-2.4** Boil to reduce volume to 150 ml. Cool to about 20°C.

**A-2.5** Filter and wash with 20 percent acetone.

**A-2.6** Extract filtrate and washings with 3 × 50 ml chloroform.

**A-2.7** Pass chloroform layer through anhydrous sodium sulphate.

**A-2.8** Concentrate to 50 ml and spot on TLC plate.

**A-3 CALCULATION**

$$\text{Aflatoxin, mg/kg} = \frac{V \times s \times 1000}{v \times m}$$

where

*V* = volume of extract in ml,

*v* = volume of extract giving minimum observable fluorescence in µl,

*m* = mass of sample in g, and

*s* = standard toxin giving minimum observable fluorescence in µg.'

(FAD 44)

**AMENDMENT NO. 3 MARCH 2002  
TO  
IS 8323 : 1977 SPECIFICATION FOR PALM OIL**

( *Amendment No. 2, page 1, clause 4.5.2.1* ) — Substitute '5  $\mu\text{g}/\text{kg}$ ' for '5 mg/kg'.

( FAD 44 )

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Reprography Unit, BIS, New Delhi, India

# Indian Standard

## SPECIFICATION FOR PALM OIL

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 15 February 1977 as an emergency standard, consequent to a specific request made by the Government of India for its preparation. Subsequently, the emergency standard has been reviewed by the Oils and Oilseeds Sectional Committee and the emergency character of this standard removed through Amendment No. 1 to this standard.

**0.2** Palm oil is obtained from the fruits of oil palm (*Elaeis guineensis*) trees. Realizing the importance of this new source of oil, efforts have been made to grow oil palm plants in different parts of the country. Such plantations have already been started in the States of Kerala, Andhra Pradesh, and Andaman and Nicobar Islands. Presently substantial quantities of palm oil are being imported into the country.

**0.3** The fruits of oil palm contain two parts, the outer fleshy part or pulp, called mesocarp and the inner seed or nut called stone. The latter consists of hard shell and kernel inside. The pulp forms about 40 to 70 percent of the fruit and contains 60 to 75 percent of the reddish coloured oil. Palmitic acid is the characteristic fatty acid (35 to 50 percent) of the oil. The other major fatty acids are oleic and linoleic (45 to 60 percent).

**0.4** This standard covers the requirements for imported as well as indigenous palm oil. In so far as the edible grade is concerned, it is expected that the requirements prescribed in this standard would be adopted shortly in the Prevention of Food Adulteration Rules, 1954, as modified from time to time.

**0.5** This standard has been prepared on the basis of technical data obtained from the Oil Technological Research Institute, Anantapur and Hindustan Lever Limited, Bombay. Reference has also been made to the draft specification for palm oil prepared by Codex Alimentarius Commission of the World Health Organization and the Food and Agriculture Organization. The assistance derived is gratefully acknowledged.

**0.6** This standard has been processed by Oils and Fats Subcommittee, CAFDC 5:1 of ISI composed of representatives of Hindustan Lever Ltd., Bombay; Director of Marketing & Inspection, Nagpur; The Vanaspati

Manufacturers' Association of India, Bombay; Bombay Oilseeds and Oils Exchange Ltd, Bombay; Directorate General of Technical Development, New Delhi; Ministry of Defence ( DGI ), New Delhi; Indian Soap and Toiletries Makers' Association, Bombay; Tata Oil Mills Co Ltd, Bombay; Regional Research Laboratory, Hyderabad; Directorate of Sugar & Vanaspati, New Delhi; The Indian Paint Association, Calcutta; Oil Technologists' Association of India, Kanpur; Oil Technological Research Institute, Anantapur; Indian Council of Agricultural Research, New Delhi; Khadi and Village Industries Commission, Bombay; Directorate of Oilseeds Development, Hyderabad; and Godrej Soaps Pvt Ltd, Bombay along with the Directorate General of Health Services ( Ministry of Health ), New Delhi.

**0.7** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## 1. SCOPE

**1.1** This standard prescribes requirements and methods of sampling and test for palm oil derived from the fleshy mesocarp of the fruit of the oil palm (*Elaeis guineensis*) tree by the process of expression.

## 2. TERMINOLOGY

**2.1** For the purpose of this standard, the definitions given under 2 of IS : 548 ( Part I )-1964† and the following shall apply.

**2.1.1 Raw Palm Oil** — Palm oil obtained by the process of expression.

**2.1.2 Refined Palm Oil** — Palm oil obtained by the process of expression which has been neutralized with alkali, bleached with bleaching earth or activated carbon or both, and deodorized with steam, no other chemical agents being used. Alternatively deacidification, bleaching and deodorization may be done by physical means.

## 3. GRADES

**3.1** The material shall be of the following two grades:

- a) Raw grade, and
- b) Refined grade.

\*Rules for rounding off numerical values ( revised ).

†Methods of sampling and test for oils and fats : Part I Sampling, physical and chemical tests ( revised ).

**3.1.1** The material of raw grade is suitable for making *VANASPATI*, bakery shortening, margarine and refined oil only, and not for direct edible consumption.

**3.1.2** The material of the refined grade is suitable for direct edible consumption.

#### **4. REQUIREMENTS**

**4.1 Description** — The material shall be obtained from the fleshy mesocarp of the fruit of the oil palm (*Elaeis guineensis*) tree by the process of expression.

**4.2** The material shall be clear on melting and free from adulterants, sediment, suspended and other foreign matter, separated water, and added colouring or flavouring substances and shall have acceptable taste and odour. It may contain permitted antioxidants in specified quantities as prescribed under Prevention of Food Adulteration (PFA) Rules of Government of India.

**4.2.1** The clarity of the material shall be judged by the absence of turbidity after keeping the filtered sample at 50°C for 24 hours.

**4.3 Admixture with Other Oils** — The material shall be free from admixture with mineral or other oils of vegetable or animal origin when tested according to the methods prescribed in IS : 548 (Part II)-1976\*.

**4.4** The material shall also comply with the requirements given in Table 1.

#### **5. PACKING**

**5.1** The material shall be packed in suitably sealed and well-closed containers. The refined palm oil shall be packed in new tin containers.

#### **6. MARKING**

**6.1** The containers shall be marked with the following particulars:

- a) Name and grade of the material;
- b) Net mass;
- c) A statement that permitted antioxidants have been used, if added;
- d) Manufacturer's name and his recognized trade-mark, if any;
- e) Batch No. or lot No. in code or otherwise; and
- f) Month and year of manufacture.

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\*Methods of sampling and test for oils and fats: Part II Purity tests (third revision).

**TABLE 1 REQUIREMENTS FOR PALM OIL**  
*( Clause 4.4 )*

SL No.	CHARACTERISTIC	REQUIREMENT FOR GRADE		METHOD OF TEST, REF TO CL NO. IN IS : 548 ( Part I )-1984*
		Raw	Refined	
(1)	(2)	(3)	(4)	(5)
i)	Moisture and insoluble impurities, percent by mass, <i>Max</i>	0·25	0·10	5 & 6
ii)	Colour in a $\frac{1}{4}$ -in cell on Lovibond scale expressed as $Y + 5R$ , not deeper than	—	50	13
iii)	Refractive index† at 50°C	1·449 1 to 1·455 2	1·449 1 to 1·455 2	10
iv)	Saponification value	195 to 205	195 to 205	15
v)	Iodine value ( Wijs )	45 to 56	45 to 56	14
vi)	Acid value‡, <i>Max</i>	10·0	0·5	7
vii)	Unsaponifiable matter, percent by mass, <i>Max</i>	1·2	1·2	8
viii)	Melting point, °C, <i>Max</i>	37	37	9
xi)	Peroxide value, expressed as milliequivalents of oxygen per kg, <i>Max</i>	—	10	20

\*Methods of sampling and test for oils and fats: Part I Sampling, physical and chemical tests (*revised*).

†This corresponds to Butyro Refractometer ( B. R. ) reading of 35·5 to 44·0.

‡The corresponding figure in terms of free fatty acids ( FFA ) when expressed as oleic acid shall be maximum 5·0 and 0·25 percent by mass for raw and refined grades of material respectively.

**6.1.1** The product may also be marked with Standard Mark.

**6.1.2** The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

**6.2** In addition, in the case of raw grade of the material, the following information shall be suitably marked, either printed on the label affixed to the container or lithographed or stencilled thereon with indelible ink in a type size not less than that used for the name and grade of the material:

‘NOT FOR DIRECT EDIBLE USE’

## **7. SAMPLING**

**7.1** Representative samples of the material shall be drawn as prescribed under 3 of IS : 548 ( Part I )-1964\*.

## **8. TEST METHOD**

**8.1** Tests shall be carried out in accordance with the methods prescribed in IS : 548 ( Part I )-1964\* and IS : 548 ( Part II )-1976† reference to which has been given in 4.3 and col 5 of Table 1.

**8.2 Quality of Reagents** — Unless specified otherwise, pure chemicals and distilled water ( see IS : 1070-1960‡ ) shall be used in tests.

NOTE — ‘Pure chemicals’ shall mean chemicals that do not contain impurities which affect the results of analysis.

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\*Methods of sampling and test for oils and fats: Part I Sampling, physical and chemical tests (*revised*).

†Methods of sampling and test for oils and fast: Part II Purity tests (*third revision*).

‡Specification for water, distilled quality (*revised*).

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